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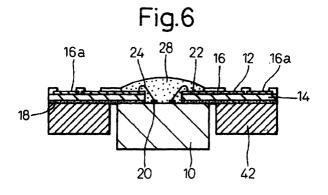
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(54) Manufacturing a semiconductor device using a film substrate

(57)Semiconductor devices are manufactured, using film substrates, as follows. Individual film substrates are separated from a film substrate tape (122) having a plurality of film substrates continuously and integrally connected to each other, each the film substrate comprising a base film (14) having first and second surfaces, a circuit pattern (16) being formed in the first surface and a mounting section being formed on the second surface. The base film (14) has an opening (15) to which electrode terminals (20) of a semiconductor element (10) are exposed when the semiconductor element (10) is mounted. The individual film substrates are adhered to respective reinforcement members (32, 42) of a reinforcement frame (40), which has a plurality of the reinforcement members continuously and integrally connected to each other. Each reinforcement member (32, 42) has an accommodation hole (44) for accommodating the semiconductor element (10), so that the semiconductor element mount section is exposed in the accommodation hole (40). A semiconductor element (10) is mounted on the film substrate by adhering an electrode terminal-forming surface of the semiconductor element (10) to said mounting section so that electrode terminals (20) of the semiconductor element are exposed in the accommodation hole (40). The electrode terminals (20) exposed in the opening (15) are electrically connected to the circuit patterns (16). The opening (15) is sealed with resin (28) and then the individual reinforcement members (32, 42) are separated from the reinforcement frame.





EUROPEAN SEARCH REPORT

Application Number EP 99 30 7877

_	Citation of document with in-	dication, where appropriate	Relevant	CI ACCIDICATION OF THE
Category	of relevant passa		to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.7)
X	PATENT ABSTRACTS OF vol. 1998, no. 08, 30 June 1998 (1998-0 -& JP 10 064952 A (S LTD), 6 March 1998 * paragraph [0015] - figures 1-9 *	1-9	H01L23/495 H01L23/498 H01L21/60 H01L23/31	
P,X	& US 5 951 804 A (Y. 14 September 1999 (I * figures 1-9 *	1-9		
A	US 5 767 528 A (SUM) 16 June 1998 (1998-6 * abstract; figures	06-16)	1-9	
A	PATENT ABSTRACTS OF vol. 1998, no. 13, 30 November 1998 (19- & JP 10 209224 A (H 7 August 1998 (1998-	1-9		
	* abstract; figures	1-4,6,8 *		TECHNICAL FIELDS SEARCHED (Int.CI.7)
				H01L
774				
	The present search report has be	en drawn up for all claims		
·	Place of search	Date of completion of the sea	rch	Examiner
	BERLIN	1 August 2001	Muni	nix, S
	TEGORY OF CITED DOCUMENTS		rinciple underlying the in	
X : partic Y : partic docur	cularly relevant if taken alone cularly relevant if combined with anothe nent of the same category lological background	E : earlier pate after the fili r D : document L : document d	ent document, but publis	hed on, or

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 99 30 7877

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

01-08-2001

	Patent document cited in search report		Publication date	ı	Patent family member(s)	Publication date
JP	10064952	A	06-03-1998	KR JP US	185570 B 2895022 B 5951804 A	20-03-199 24-05-199 14-09-199
US	5767528	Α	16-06-1998	JP	9232368 A	05-09-199
JP	10209224	Α	07-08-1998	NONE		

			Official Journal of the Europ			